

Novelties in *Angelphytum* and *Oyedaea* (Compositae: Heliantheae: Ecliptinae) from South America

JOHN F. PRUSKI

United States National Herbarium
Department of Botany, MRC-166
Smithsonian Institution
Washington, DC. 20560-0166, U.S.A.

Abstract

Oyedaea cuatrecasii from Colombia and *Oyedaea neei* from Bolivia are described as new and their relationships are discussed. The new combinations *Angelphytum apense* and *Angelphytum herzogii* are made for species formerly placed in *Zexmenia*.

Introduction

Ecliptinae LESSING, a subtribe of Compositae: Heliantheae has been delimited by ROBINSON (1981), although most of its genera were more recently treated under the name Verbesininae by KARIS & RYDING (1994), who did not subtribally place *Eclipta*. Generic additions and adjustments of ROBINSON (1984a, 1984b, 1992, and literature cited therein), STROTHER (1991 and literature cited therein), PRUSKI (1996 and literature cited therein), and most of the suggestions in PANERO et al. (1999) are accepted as emendations to the Ecliptinae as defined by ROBINSON (1981). The subtribe Verbesininae treated as a synonym of the Ecliptinae by ROBINSON (1981), STROTHER (1991), and PRUSKI (1996), was recently resurrected by PANERO et al. (1999) and includes only *Verbesina* and three small Mexican and Central American genera. The following novelties in genera with winged fruits are the result of routine identifications of species mostly from Andean South America.

Angelphytum

Angelphytum BARROSO was originally described for a disciform species, but the generic concept has been expanded by ROBINSON (1984b) to include several species with winged fruits and fertile ray florets from South America once referred to *Zexmenia* LA LLAVE. *Angelphytum* differs from *Zexmenia* most notably (ROBINSON 1984b) by being largely

xylopodial herbs, less commonly shrubs, by abaxially glanduliferous, strongly recurved (vs. non-glandular, gradually curving) style branches, and by non-constricted (vs. apically constricted) cypselas. *Dimerostemma* CASS. in broad disk corollas, winged fruits, and leafy involucre is similar to *Angelphytum*, but differs in sterile ray florets. The two radiate species transferred here fall within *Angelphytum* as delimited by ROBINSON (1984b). The generic limits of *Angelphytum* are currently being studied by MARTA D. MORAES (UEC), a student of Dra. GRAZIELA BARROSO. As presently circumscribed, *Zexmenia* contains only two species, both Central American (STROTHER 1991). The two new combinations proposed here raises to 16, the number of species in *Angelphytum*.

Angelphytum apense (CHODAT) PRUSKI, comb. nov. Basionym: *Aspilia apensis* CHODAT, Bull. Herb. Boiss., Ser. 2, 3: 721. 1903. *Zexmenia apensis* (CHODAT) HASSLER, Repert. Spec. Nov. Regni Veg. 14: 177. 1915. Syntypes: PARAGUAY: Prope Valenzuela (protologue), in regione cursus superioris fluminis Y-acá (label), Feb 1900, HASSLER 7096 (syntype: G n.v., photograph: US!); In regione cursus superioris fluminis Apa, Nov 1901, HASSLER 7731 (syntype: G n.v., photograph: US!).

This species is a shrubby herb with fertile ray florets and occurs in Paraguay and adjacent Mato Grosso do Sul, Brazil. It and the one following are similar by opposite, broad, long-petiolate leaves. *Angelphytum apensis* differs most noticeably from the closely related *A. herzogii* by serrulate to weakly serrate (vs. serrate to dentate) leaves, by cypselas with poorly (vs. well) developed pappus awns, and by smaller capitula commonly with shorter leafy outer phyllaries. Lectotypification is deferred until both syntype collections are examined.

Angelphytum herzogii (HASSLER) PRUSKI, comb. nov. Basionym: *Zexmenia herzogii* HASSLER, Repert. Spec. Nov. Regni Veg. 7: 357. 1909. Type: BOLIVIA. Santa Cruz: Halbstrauch im Bergwald von Samaipata (Ostkordillere), ca. 1700 m, Dec 1907, HERZOG 704 (G n.v., HBG?).

This Bolivian shrub with fertile ray florets was known only from the type, until plants matching the protologue were recently rediscovered by MICHAEL NEE (NY) in several localities, these and the type all from Depto. Santa Cruz, Bolivia. Also other material from Depto. Santa Cruz, Bolivia under the name *Zexmenia apensis* is determined here as *Angelphytum herzogii*. The type of *Zexmenia herzogii* was not seen, but a photocopy and a drawing of the flowers by GISELA SANCHO (LP) of the type number in G on loan to ALCIDES SAENZ (LP) has been recently sent to me. Examination of this material and other collections from Bolivia show this taxon to be a species of *Angelphytum*. The specimen of *Zexmenia herzogii* in G is fragmentary and no specimens of this collection were found in Z. Thus, it seems that a full sheet (the holotype?) is elsewhere, perhaps in HBG or as a second sheet in G.

Oyedaea

Oyedaea DC., revised by BLAKE (1921) and characterized in part by winged fruits and sterile ray florets, is largely Andean, although at present not known from Ecuador (PRUSKI 1997, H. ROBINSON, pers. comm.). One species (*O. verbesinoides* DC., the type) extends from the Andes eastward into the Venezuelan coastal ranges and north into Central America, and three others are endemic to the Guayana Highland (PRUSKI 1996, 1997). The other Central American species of *Oyedaea* (*O. steyermarii* S.F. BLAKE, *O. mexicana* RZEDOWSKI, *O. ovalifolia* A. GRAY, and *O. lundellii* H. ROB.,) have been transferred to *Lundellianthus* H. ROB. (ROBINSON 1979, STROTHER 1989), *Otopappus* BENTH. (ROBINSON 1979), *Perymeniopsis* H. ROB. (ROBINSON 1978, STROTHER 1991), and *Zyzyxia* STROTHER (STROTHER 1991), respectively. The Brazilian species once placed in *Oyedaea* have been removed to *Dimerostemma* CASS. by ROBINSON (1984a), the latter differing by its leafy involucre and broader disk corollas. *Oyedaea* was recently treated by PRUSKI (1996, 1997) as containing about 16 species (including *O. neei*), this number plus *O. cuatrecasasii* now increases to 17, the number of species in the genus.

Oyedaea cuatrecasasii PRUSKI, sp. nov. Type: COLOMBIA. Meta: La Serranía entre los ríos Ariari y Meta, Los Churrubayes, 300 m, 24 Nov 1939, J. CUATRECASAS 7853 (holotype: US-1774514!; isotypes: BC n.v., F n.v.).

Oyedaeae verbesinoideae affinis, sed ab ae lamina foliorum basi rotunda vel acuta, capitulisque paucis diversa.

Subshrubs to shrubs 0.8–3 m tall; stems subterete, strigose, the internodes 2–11 cm long, commonly slightly shorter than the subtending leaves. Leaves simple, opposite; petioles 2–8 mm long, strigose; blades elliptic-lanceolate, (2.5) 3.5–9.5 × 1–4.5 cm, chartaceous, eglandular, weakly to moderately triplinerved from well above base, venation strongly reticulate, basally rounded to acute, apically acute to sometimes narrowly so, the margins subentire to serrulate, adaxially green, scabrous, abaxially paler green, strigose, especially on larger veins. Capitulescences corymbiform to rarely monocephalous, somewhat compact and not loose and spreading, terminal or sometimes also axillary from uppermost leafy node, with 1–5 capitula held above the subtending leaves, less commonly overtopped by uppermost leaves; peduncles 0.5–4.5 (6) cm long, densely hispid to strigose. Capitula radiate, 45–119-flowered; involucre campanulate, 8–11 × 8–12 mm; phyllaries 16–19, in 2–3 series, subequal, 8–11 × 2–3.5 mm, rigid, the outer series herbaceous, lanceolate to oblanceolate, strigose, the apex acute to obtuse, the inner series lanceolate to elliptic-lanceolate, strigose or only so apically, scarious at base, the apex acute, herbaceous; receptacles flat, 3–4 mm diam., paleate, the pales conduplicate, lanceolate, to ca. 7.8 × 1 mm, firm, scarious

with a brownish-greenish strigose central nerve extending to near tip, the apex acute. Ray florets 10–12, sterile, lacking styles; corollas yellow, ca. 10–19 × 3 mm, the tube 1.5–2 mm long, glabrous, the limb 8.5–17 × 3–5.6 mm, 8–13-veined with 2 veins larger than the others, glabrous or weakly abaxially puberulent, shortly 2-lobed at apex, apical lobes ca. 0.6 mm long. Disk florets 35–107, bisexual; corollas actinomorphic, yellow, tubular-funnelform, 5.3–6.6 mm long, the tube 1.2–2 mm long, glabrous, the throat 3.3–3.8 mm long, glabrous, the lobes ca. 0.8 mm long, triangular, weakly puberulent; anthers included, 2.5–3 mm long, the thecae black, the apical appendages deltoid, becoming cream-colored, glanduliferous, the connectives black, the filaments ca. 1.5 mm long; style branches ca. 1.5 mm long, papillose, slightly spreading to recurved, with paired stigmatic lines, the apices sterile, lanceolate. Ray ovaries sterile, 2–2.6 mm long, obconic, 1–3-awned, the awns (0.8) 2–3 mm long, subequal to unequal. Disk cypselas (immature, thus wings not formed) compressed, ca. 3 mm, the body brown to black, weakly puberulent, the margins ciliate; pappus stoutly 2-awned, the awns scabridulous, subequal to unequal, 2.6–4 mm long, these about as tall as the involucre and pales, the squamellae between the awns to ca. 0.5 mm long.

Paratypes: COLOMBIA. Meta: Mun. La Macarena, Reserva de La Macarena, 20 km NO en la vía a Conejos, 450 m, 2°15'N, 73°45'W, 7 Aug 1988, R. CALLEJAS & O. MARULANDA 6966 (US!); Mun. La Macarena, 5 km O de La Macarena, vía a Conejos, 410 m, 2°16'N, 73°11'W, 7 Aug 1988, R. CALLEJAS & O. MARULANDA 7052 (US!); San Juan de Arama, valle a la izquierda del río Güejar frente a la parte norte de la Sierra de La Macarena, 500 m, 23 Aug 1950, J.M. IDROBO 467 (US!); Reserva Biológica de la Macarena, río Guayabaro 4 km al suroeste del Refugio, 350 m, 26–28 Oct 1976, R. STARR 74 (US!); 35 km al E de San Martín, en ruta hacia, 16 Jun 1989, F.O. ZULOAGA 4009 (US!).

Distribution and ecology: This species is known only from savannas and gallery forests in the region of Sierra de la Macarena, Meta, Colombia. It occurs from 300–500 m in elevation and has been collected in flower in June, August, October and November.

This species is named for its discoverer, the late (ROBINSON et al. 1996) Dr. José CUATRECASAS. DON JOSÉ was the foremost Colombian taxonomist of modern times, and he specialized in Compositae. It is thus fitting and proper that I dedicate this new species to him.

Oyedaea cuatrecasasii is very similar in leaf shape and size to extra-Guayana Venezuelan *O. maculata* S.F. BLAKE and *O. obovata* S.F. BLAKE, both of which differ from the new species, however, by pinnately veined leaves. In its generally triplinerved leaves

the new species is similar to the northern Andean and Guayanan group including *O. huilensis* CUATR., *O. reticulata* S.F. BLAKE, *O. tepuiana* (V.M. BADILLO) PRUSKI, *O. verbesinoides* DC., and *O. wurdackii* PRUSKI. The new species generally has longer pedunculate capitula and less pubescent ray limbs than the other species. Additionally, *Oyedaea cuatrecasasii* differs from *O. verbesinoides* by acute to rounded (vs. attenuate) leaf bases and by few (vs. several) capitula per branch. By leaf shape Colombian *O. huilensis* and *O. reticulata* are similar to *O. verbesinoides* but they differ from it and the new species by leaves abaxially harshly pilose-hispid and by unequal phyllaries. Additionally, *O. huilensis* and *O. reticulata* differ from the new species by larger leaves and by a larger capitulescence with many capitula. *Oyedaea cuatrecasasii* differs from *O. wurdackii* by yellow (vs. white) ray corollas and from *O. tepuiana* by larger and longer pedunculate capitula. *Oyedaea scaberrima* (BENTH.) S. F. BLAKE from the Guayana Highland differs from the new species by unequal phyllaries and pinnately veined leaves.

Oyedaea neei PRUSKI, sp. nov. Type: BOLIVIA. Santa Cruz: Prov. Florida, 4 km N of center of Samaipata, 18°08'S, 63°52'W, 2000—2100 m, 31 Dec 1992, M. NEE & I. VARGAS C. 43442 (holotype: US-3362069!; isotypes: LPB n.v., NY!, USZ n.v.).
Fig. 1.

Oyedaeae bolivianae affinis, sed ab ea foliis minoribus ellipticis acutis, capitulis paucis, pedunculisque longioribus diversa.

Low shrubs; stems subterete or subhexagonal, strigose, the internodes 0.5–3.5 cm long, usually shorter than the subtending leaves. Leaves simple, opposite; petioles 2–3 mm long, strigose, stout and much broadened at base, those of the same node often connected by a narrow rim; blades elliptic, 1–2.5 × 0.4–1.3 cm, chartaceous, eglanduliferous, triplinerved from well above base, basally cuneate to attenuate, apically acute, the margins serrulate to subentire, adaxially green, scabrous, abaxially pale green, weakly strigose especially on larger veins, nearly glabrescent with age. Capitulescence monocephalous or cymose, open, terminal, of 1 or less commonly 2 capitula held above the subtending leaves; peduncles 1.5–3.5 cm long, strigose. Capitula radiate, ca. 30-flowered; involucre campanulate to hemispherical, 6–7.5 × 9–13 mm; phyllaries ca. 17, in 2–3 series, subequal or weakly graduate, lanceolate to oblanceolate, 6–7.5 × 1.5–3 mm, rigid, broad and scarious at base, the apex broadly acute to obtuse, herbaceous, strigose; receptacles flat, ca. 5 mm diam., paleate, the pales conduplicate, often keeled near the apex, ca. 8.5 mm long, firm, scarious throughout, attenuate. Ray florets ca. 11–13, sterile, lacking styles; corollas yellow, the tube ca. 1.6 mm long, glabrous, the limb ca. 9.5 × 3–4 mm, minutely 2- or 3-lobed at apices, ca. 17-veined with ca. 4 veins larger than the others, smaller veins often anastomosing, abaxially glabrous or weakly puberulent to weakly pilose near tube. Disk florets ca. 15–19,

bisexual; corollas actinomorphic, yellow, tubular-funnelform, 4–4.5 mm long, the tube ca. 1 mm long, glabrous, the throat 2.5–3 mm long, glabrous, the lobes ca. 0.5 mm long, triangular, puberulent-papillose to densely so; anthers slightly to much-exserted, ca. 2.5 mm long, the thecae black, the apical appendages ovate, tan, eglandular; style branches ca. 1 mm long, densely papillose or weakly so, laxly recurved, with paired stigmatic lines, the apices acuminate to attenuate. Ray ovaries sterile, ca. 2.5 mm long, obconic, 3-awned, the awns 1.5–2.5 mm long, subequal to unequal. Disk cypselas compressed, slightly winged, ca. 4 1.5 mm, the body black, puberulent, the wings ciliate, cream colored, brown-spotted; pappus stoutly 2-awned, the awns weakly scabridulous, subequal to unequal, 2–3 mm long, these exerted from the involucre and often reaching to the top of the pales, the squamellae between the awns 7–10, to ca. 0.8 mm long.

Distribution and ecology: This species is known only from the type collection, from grazed ridge tops in the area near Samaipata in Depto. Santa Cruz, Bolivia. It occurs from 2000–2100 m and was collected in flower in December.

I am happy to name this new *Oyedaea* for the collector of the type material, my friend Dr. MICHAEL NEE of the New York Botanical Garden. MICHAEL's fine collections from Depto. Santa Cruz, Bolivia also resulted in the rediscovery of *Zexmenia herzogii*, transferred here to *Angelphytum*.

By its triplinerved leaves Bolivian *O. neei* is most closely related to *Oyedaea boliviana* BRITTON. However, the new species clearly differs from shrubby arborescent *O. boliviana* by low stature, by very small elliptic (vs. lanceolate) acute (vs. acuminate) leaves, by fewer or solitary capitula with shorter ray limbs, and by longer peduncles. Bolivian *O. bullata* KOSTER is another species with triplinerved leaves, but differs from the two former species by its involucre. The other Andean species of *Oyedaea* from Peru and Bolivia have pinnately veined leaves and are less closely related.

Acknowledgements

I thank PEDRO ACEVEDO, RUPERT BARNEBY, MICHAEL NEE, DAN NICOLSON, and HAROLD ROBINSON for reviewing this paper; RUPERT BARNEBY for correcting the Latin diagnoses; GISELA SANCHO for her drawing of the type of *Zexmenia herzogii*; GISELA SANCHO and ALCIDES SAENZ for sending me a xerox of the type collection of *Zexmenia herzogii*; and DON HURLBERT, VICTOR KRANTZ, and JOHN STEINER for the photograph of the type of *Oyedaea neei*.



Fig. 1. Photograph of the holotype of *Oyedaea neei* (NEE & VARGAS 43442, US).

References

- BLAKE, S. F. 1921. Revision of the genus *Oyedaea*. *Contr. U.S. Natl. Herb.* 20: 411–422.
- KARIS, P. O. & O. RYDING 1994. Chapter 22, Tribe Heliantheae. *In*: K. BREMER *Asteraceae: Cladistics & Classification*, pp. 559–624. Timber Press, Portland, Oregon.
- PANERO, J. L., JANSEN, R. K. & J. A. CLEVINGER 1999. Phylogenetic relationships of subtribe Ecliptinae (Asteraceae: Heliantheae) based on chloroplast DNA restriction site data. *Amer. J. Bot.* 86: 413–427.
- PRUSKI, J. F. 1996. Compositae of the Guayana Highland-XI. *Tuberculocarpus* gen. nov. and some other Ecliptinae (Heliantheae). *Novon* 6: 404–418.
- PRUSKI, J. F. 1997. Asteraceae. *In*: J. A. STEYERMARK et al. (eds.), *Flora of the Venezuelan Guayana*, Volume 3. Araliaceae–Cactaceae, pp. 177–393. Missouri Botanical Garden, St. Louis.
- ROBINSON, H. 1978. Studies in the Heliantheae (Asteraceae). XIII. A new genus, *Perymeniopsis*. *Phytologia* 40: 495–496.
- ROBINSON, H. 1979. Notes on *Oyedaea* in Central America (Heliantheae: Asteraceae). *Wrightia* 6: 43–45, pl. 82.
- ROBINSON, H. 1981. A revision of the tribal and subtribal limits of the Heliantheae (Asteraceae). *Smithsonian Contr. Bot.* 51: i–iv, 1–102.
- ROBINSON, H. 1984a. Studies in the Heliantheae (Asteraceae). XXXI. Additions to the genus *Dimerostemma*. *Proc. Biol. Soc. Wash.* 97: 618–626.
- ROBINSON, H. 1984b. Studies in the Heliantheae (Asteraceae). XXXIV. Redelimitation of the genus *Angelphytum*. *Proc. Biol. Soc. Wash.* 97: 961–969.
- ROBINSON, H. 1992. New combinations in *Elaphandra* STROTHER (Ecliptinae-Heliantheae-Asteraceae). *Phytologia* 72: 144–151.
- ROBINSON, H., FUNK, V. A., PRUSKI, J. F. & R. M. KING 1996. JOSÉ CUATRECASAS ARUMÍ (1903–1996). *Comp. Newsl.* 29: 1–30.
- STROTHER, J. L. 1989. Expansion of *Lundellianthus* (Compositae: Heliantheae). *Syst. Bot.* 14: 544–548.
- STROTHER, J. L. 1991. Taxonomy of *Complaya*, *Elaphandra*, *Iogeton*, *Jefea*, *Wamalchitamia*, *Wedelia*, *Zexmenia*, and *Zyzyxia* (Compositae-Heliantheae-Ecliptinae). *Syst. Bot. Monogr.* 33: 1–111.